Designing Visualizations for Understanding
The Digital Institute, School of Computing Science, Newcastle University.

**What is it:** an intermediate course covering techniques for improving visualizations.

**Pre-requisites:** basic knowledge of a BI tool such as MS Power BI or Tableau.

**9:30 Exploratory Data Analysis**
What is visualization?
Why it helps to understand data before analysing it, Tukey’s approach EDA.
Pens and Paper, Web Cam

**10:15 Human Vision**
Film: Perception test
Main screen
What can we see and what can’t we see - the limits of human basic vision.
Pre-attentive visual cues.
Pop-out and highlighting important data.
Films: Perception in 3D A and B
Main screen

**10:45 Break**
*Quiz A: Human Perception for Visualization*
Main Screen + Clickers
11:15 Tempting Tables

When to use tables.
What types of tables for what types of data.
Improving the visual appeal of tables.

Exercise B: Improving tables. UPDATE DATA
Tableau on 4K Sharing screens – 4K on 2K?

12:00 Principles underpinning Graphic Design

Perception tests: Spot the difference images.
Main screen

Working memory and the importance of simplicity in good design

Rules that underpin visual comprehension and graphic design:
  Gestalt theory
  Memorability
  Pattern recognition
  The PARC rules for design

12:30 Lunch

Quiz: Tables and Graphic Design
Main Screen + Clickers

1:30 Glorious Graphs

When to use graphs and charts
  ● Bar charts
  ● Line graphs
  ● Tree maps
  ● Pie charts

1:50 Colour
  ● The physics of colour
  ● CIE colour charts
  ● Naming colours
  ● Choosing a colour palette

Exercise C: Applying PARC to graphs
Tableau on 4K Sharing screens – 4K on 2K?
3:00 Break

*Quiz: Graphs, Charts and Colour*

*Main Screen + Clickers*

3:30 Geographic Visualization
- Coordinate systems
- Map choices
- Plotting data on maps

*Exercise D: Plotting geographic data*

4:00 Review, next steps, Q&A
- What we covered
- Developing style guidelines
- The ONS guidelines